


THE
SUPRAPUBIC OPERATION
OF
OPENING THE BLADDER
BY
J. M. THOMPSON

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THE
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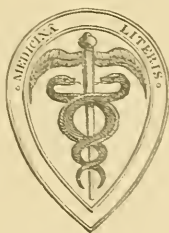
ON THE
SUPRAPUBIC OPERATION
OF
OPENING THE BLADDER
FOR THE STONE
AND
FOR TUMOURS

BY

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PREFACE.

THE high operation for opening the bladder has, in my opinion, been rendered so safe and efficient by certain modifications recently made—chiefly by Professor Petersen, of Kiel—as to deserve the careful attention of all practical surgeons.

During little more than a year I have performed it eight times—six for large calculus, and twice for tumour, also large—all of these being test cases of no ordinary severity ; and the results are presented here for the consideration of my brethren.

The value of the rectal distension, which Petersen was the first to use, is very great, and has, indeed, rendered an operation, formerly associated with some risk, almost absolutely safe, as regards injury to the peritoneum. I have also found considerable advantage in limiting the use of the knife to the fibrous layers, and in employing the finger-nail, or an ivory separator, to divide other tissues and draw aside the veins, thus avoiding the risk

of serious hæmorrhage. I am not aware that this method has been adopted for the operation before ; the idea arose in my own mind in connection with my first case, in July 1884, and was described in the report at the time. This, however, is a matter of small importance ; but there can be no question as to the value of the method itself.

LONDON : 35 WIMPOLE STREET.

January 1, 1886.

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ON
THE SUPRAPUBIC OPERATION
OF
OPENING THE BLADDER.

I THINK that among experienced surgeons there will be little or no dissent from the proposition that the operation of lithotrity at a single sitting is, in fairly experienced hands, that which is best calculated to ensure a successful result for nine cases out of ten of stone in the bladder occurring among adult patients. And it may also be held as generally agreed that neither stricture of the urethra nor hypertrophy of the prostate, neither chronic disease of the bladder nor organic disease of the kidneys, is a condition which forbids the application of the crushing operation, or demands instead thereof any application of the knife.

Calculus
in adult
generally
amenable
to litho-
trity;

For the modern operation of lithotrity, when performed by a skilful operator, is effective to

even when
hard and
weighing
from two
to three
ounces;

or, when
phosphatic,
still
larger.

Large
calculi
ought not
to be
formed;

remove hard calculi of very considerable size, say those which are even above two ounces in weight; the largest I have thus dealt with being a hard uric acid calculus weighing $2\frac{3}{4}$ ounces (80 grammes), and with successful result. I by no means deny that even a larger size may be so extracted, but I do not say that it would be often prudent to undertake the task. Much depends on the operator and his experience. Phosphatic calculi of still larger weight may be crushed successfully. But there is a limit, which no man can define, even to the capability of modern lithotrity. There are calculi too large and too hard to be removed by that operation, and for which some other proceeding is necessary.

It is a fact deserving consideration, that such calculi ought not to exist; that it is always somebody's fault when a calculus even of one ounce is present in a human bladder. I am very far from saying that the oversight is frequently due to defective observation on the part of the medical attendant, an occurrence which, according to my experience of this matter, is rarely met with. Some patients endure their troubles without seeking advice; others are the victims of an incompetent quack; while not a few indulge themselves in consuming some

notorious 'remedy' or 'solvent' for the stone, and have thus rapidly augmented, as I have occasionally seen, the size of a foreign body in the bladder. By all of these means large stones are sometimes

are the result of neglect, incompetency, or indifference.

formed ; destined when in that condition to be discovered as soon as the patient falls into the hands of a competent surgeon ; and were this the place to adduce illustrative examples of this kind, it would be an easy task to furnish several. But patients themselves are sometimes curiously wilful, obstinate, or indifferent. About sixteen years ago I was consulted by a gentleman with the symptoms of stone ; on sounding him I found a small one, and recommended that it should be crushed without delay. This advice was not taken ; he did not reappear, and I soon lost all recollection of the circumstance. Last summer I was sent for into the country to examine a calculous patient of seventy-six years of age, who was too infirm and too severely suffering to come to London. I then learned that this was my former visitor who had been unable to decide on taking the advice given him, and now in his dire extremity, and after many years of suffering, had summoned me to do my best for him. I performed the high operation forthwith, removing a stone weighing no less than

An illustrative case.

6½ ounces, after which he made a sound recovery, and is now quite well. His age and antecedents considered, he must be considered a fortunate man. See Case vi. p. 53.

Important to determine what is the best proceeding, when stone too large to be crushed.

It appears then that an important question which surgeons have now to determine is :—What is the best proceeding to employ as a supplement to lithotrity for those unusually large stones for which that operation is inadequate. It would not be legitimate to say that any single proceeding should be held up as necessarily the best and only possible one, applicable to every condition outside the comprehensive limits of the crushing operation ; but that there is one operation conspicuously superior to all others, is an opinion which has been forced upon me by the weight of testimony from others, and by my own experience. When I had the honour to fill the chair of Surgery and Pathology at the Royal College of Surgeons last year, I stated my opinion, based on the experience of European surgeons personally known to me, and I may say largely on that of my friend Professor Guyon of Paris, that the high operation with certain recent modifications was that which would most advantageously replace the lateral operation for extremely large calculi, and that

The high operation with recent modifications.

thenceforth I should certainly employ it. Fair opportunities of doing so have now fallen to my lot, and although at present moderate in number, have amply sufficed to satisfy me that there is no proceeding at all comparable to the high operation for stones of the kind referred to. I will go further, and I will add that it is my belief, that in the hands of most operating surgeons this proceeding will prove a safer and a far easier one than lithotripsy, with all its advantages, for hard stones when they have arrived at about $1\frac{1}{2}$ to 2 oz. in weight.

A very safe and satisfactory proceeding.

It will be advantageous here briefly to trace the interesting history of the high, or suprapubic operation, from its earliest appearance to the present time, and observe the steps by which it has reached its present efficiency.

Historic sketch.

Whatever may be said relative to occasional speculative allusions by some writers to the subject, it is certain that there is no record of any suprapubic operation until that of Pierre Franco, the surgeon of Lausanne, about the middle of the sixteenth century. He cut a child of two years old, removing a large calculus. The method he employed was to inject the bladder forcibly with water, the presence of which was insured by an

Pierre Franco, 1556.

assistant grasping the penis throughout the operation, and to dissect to the bladder in the median line without a staff, opening the organ at its anterior aspect behind the pubic symphysis.¹

Rousset,
1581.

Little more is heard of the operation for a long period of time, except a recommendation of it by Dr. F. Rousset, of Montpellier, based solely on theoretical grounds after several dissections of the subject, when advocating the cæsarian operation, for he did not practise lithotomy.² He suggested also, as one method of performing it, that a grooved catheter might be used as a guide to open the bladder upon.

Hildanus
1680.

Hildanus gives instructions for its performance, and makes a special point of the necessity for bringing the stone into position near the opening by putting the fingers into the rectum for that purpose. He thinks the operation is unfit for the adult, because the fingers are not long enough to accomplish this, as they are in the smaller organs of the child.³ It is interesting to observe that at

¹ *Traité des Hernies*, par P. Franco. Lyon : A. Vincent, 1556, ch. xxxii.

² *Traité Nouveau de l'Hysterotomotokie, ou Enfantement Césarien*. Paris, 1581, ch. vii.

³ *Treatise on Lithotomy*, printed at Frankfort, 1682. He speaks, evidently by misapprehension, of removing the stone by the groin, instead of in the middle line.

this early date there was a recognition of the advantage to be obtained by making pressure on the stone in a direction from below upwards, through the rectum. No doubt this was suggested by the well-known use made of the rectum for steadying the stone in the old Celsian procedure of 'cutting on the gripe.'

At the end of the century, that is, in 1694, ^{Proby, 1694.} Proby of Dublin operated for the removal of a bodkin in the bladder of a young woman aged twenty, from above the pubes. He could feel the head of it there when his assistant pressed on the other end with his finger in the vagina. He simply cut down upon it direct, not in the median line, and withdrew it from the bladder; having tried without success to extract it from the organ by the urethra. She made a good recovery. He was acquainted by report with the 'sectio alta,' and on that account felt justified in performing the operation, which he reported in the 'Philosophical Transactions' of the year 1700.¹

After this the operation was employed by a ^{John Douglas, 1719.} well-known lithotomist in this country, John Douglas, F.R.S., Surgeon to the Westminster Hospital, who advocated it in a work first pub-

¹ *Phil. Trans.* vol. xxii. p. 155.

lished in 1720. In a subsequent work in quarto he gives the details of four cases occurring in boys, the oldest of whom was sixteen, all successful.¹ His plan also was to inject the bladder and to dispense with the staff. Deschamps observed respecting it, that the honour of establishing the high operation as a mode of practice was due to Douglas.²

Cheselden, 1723.

Cheselden performed it very successfully at the outset of his career, and published a treatise illustrating his method in 1723. He appends three plates, Nos. 3, 4, and 5, representing dissections to show that when the bladder is well distended, there is sufficient space to make a considerable opening above the pubes without endangering the peritoneum. He thinks an injection of 12 oz. sufficient for an adult, and 8 oz. for a boy of nine years old. His operation is the same as that of Douglas, without a staff. He appends the cases of nine patients, all lads below twenty years of age ; his first case being operated on in May 1723.³ Subsequently to this, Cheselden appears

¹ *Lithotomia Douglassiana*. London : Rivington, 1723. The date of his first operation was December 1719.

² *Traité historique*. Paris, 1796, tome ii. p. 196.

³ *Treatise on the High Operation for the Stone*. By William Cheselden, F.R.S. With seventeen copper-plates. London : John Osborn, 1723.

to have been influenced by the reported success of Raw's perineal operation in Holland, and also by the fact that some English surgeons had, through want of care, burst the bladder by over-injecting it, and had also opened the peritoneal cavity,—neither accident having happened to himself. About this time several provincial surgeons published cases of the high operation, such as Pye and Thornhill of Bristol, Middleton, and Macgill of Edinburgh, 1722–24—in all about twenty-four cases, four of whom only were adults.

Cheselden subsequently advocates the lateral method.

Provincial English surgeons early in the eighteenth century.

Morand of Paris was strongly impressed in its favour by the results obtained in England, with which he was well acquainted. He published an account of these, adding a single operation by himself on a paralytic patient aged sixty-eight years, a very unfavourable subject, 'who demanded of him the English operation,' and who sank about six weeks after it.¹ Morand visited London in 1729 and saw much of English surgery. Deschamps says of him that he was 'much infected by Anglomania.'² He certainly followed Cheselden, after this visit, in relinquishing the high operation for that modification by him of the

Morand, 1725.

¹ *Traité de la Taille au Haut Appareil*. Par M. Morand. Paris, 1728, p. 229 et seq.

² *Deschamps sur la Taille*, vol. ii. p. 202. 1796.

perineal operation which became so generally known and employed here as 'lateral lithotomy,' and in France as 'la taille latéralisée.'

Heister,
1739.

Heister performed the high operation once only, and gave a full account of it. The patient was a man aged thirty years, in whom an attempt to remove the stone by the perineal operation had failed. Heister reproduced in his work the plates of Cheselden already referred to.¹

Sharp's
observations,
1750.

How completely the lateral operation had by the middle of the century replaced the former, may be learned from Samuel Sharp, surgeon to Guy's Hospital, who wrote as follows:—'Some of the difficulties which occurred in the execution of it' (the high operation) 'appeared so frightful that it was suddenly disused, and at present there is no one surgeon in Europe who continues to practise it.' Nevertheless he continues, 'I should not be surprised . . . if it should be revived and practised with success.'²

Frère
Come,
1758.

After this, Frère Come, who had been regularly and well educated as a surgeon, practised lithotomy largely in Paris, employing the lateral

¹ *Institutiones Chirurgicæ*. Heister, Laur. 2 vols. 4to. Amsterdam, 1739. Date of the English edition, translated, is 1753.

² *A Critical Enquiry into the Present State of Surgery*. By S. Sharp. London, 1750, p. 196.

method there at the Free Hospital for the Poor near the Rue St. Honoré, to which he was attached ; but, unlike other French surgeons, he employed the high operation for a good many exceptional cases during the third quarter of the last century, commencing in 1758. He subsequently published a treatise on the subject, viz. in 1779,¹ describing his own method, which consisted in making a small opening from the perineum to the urethra at the membranous portion (the boutonnière) in order to enable the operator to introduce a well-curved sound containing a sharp and strong stylet (sonde à dard) immediately behind the symphysis, at which spot the bladder was to be pierced by the dart from within outwards, when the organ had been reached by dissection from the surface. He dispensed with the process of injecting the bladder, which he declared to be the most painful part of the operation as hitherto performed, and was guided by the sound described. This method, however, never came into vogue in this country.

Frère
Come's
method
with a
stylet.

Deschamps even thought a rectal puncture of the bladder might supersede the boutonnière for introducing the sonde à dard, but it was not

Des-
champs,
1790.

¹ Come's *Nouvelle Méthode d'extraire la Pierre*, &c. Bruxelles, 1779.

adopted, and the perineal incision also was generally rejected by subsequent surgeons.

Various
surgeons
of the
present
century.

During the present century the suprapubic route has been frequently adopted for unusually large examples of calculus, and for cases of exceptional difficulty presented in the perineum. Dupuytren, Scarpa, Soubierbielle for many years its warm partisan in Paris; Carpue, who studied under him there in 1817, advocated it zealously in London afterwards;¹ E. Home,² besides Leroy d'Etiolles, Velpeau, and Civiale, among others, practised it more or less in such circumstances. Murray Humphrey, of Cambridge,³ performed it there in 1850, examining and discussing its merits favourably, after carefully collecting a large record of published cases.

I first performed the high operation on a young woman in 1865 in University College Hospital, to remove a hair-pin which I had vainly endeavoured to extract by the meatus: and again on a gentleman in 1877, aged 58, with an ankylosed hip not admitting him to assume the position necessary to the lateral operation, for a calculus weighing about two ounces.

¹ *History of the High Operation.* By J. C. Carpue, F.R.S. London, 1819.

² *Home on Stricture*, vol. iii. p. 359. London, 1821.

³ *Provincial Med. Trans.* vol. xvii. 1850, p. 103.

In America the same operation has been adopted, and it has been found more successful for very large calculi than the lateral method.¹

Such is a brief general outline of the history of the high operation up to recent times. A very complete and carefully-arranged historical study of this subject is to be found in a work by Dr. E. Bouley, of Paris, to which those who desire to pursue that matter further are referred.²

The method of performing the operation which has been pretty uniformly adopted by all operators during the last few years may be appropriately described here in very brief terms. The bladder having been made to retain as much fluid as the circumstances permit, the surgeon passes into it the sonde à dard (fig. 1), an instrument having the form of a prostatic catheter, and by depressing its handle raises the point nearly to the level of the upper border of the symphysis. The sound contains in its interior a strong stylet with a cutting point, which latter is concealed close to the apex of the sound, and lies in its concavity, whence it

The method of performing the operation adopted before 1880. Distension of the bladder. Introduction of a sound.

¹ *American Journal of the Medical Sciences*, July, 1875, page 39. Dr. C. W. Dalles collected from the literary records of surgery 465 cases, forty-two of which had been performed in America.

² *De la Taille Hypogastrique*. Par E. Bouley, M.D. &c. Paris : Baillière et fils, 1883.

can be made to emerge at the will of the operator.

First in-
cision.

Linea
alba cut
by the
aponeuro-
tome.

Use of
the sonde
à dard.

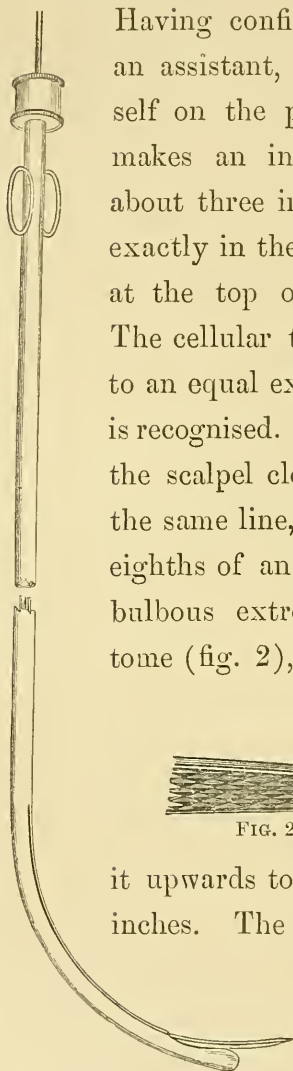


FIG. 1.—The 'Sonde à dard.'

Having confided the sonde à dard to an assistant, the surgeon places himself on the patient's right side, and makes an incision above the pubes, about three inches or more in length, exactly in the median line, and ending at the top of the pubic symphysis. The cellular tissue and fat are divided to an equal extent, until the linea alba is recognised. He next divides this with the scalpel close to the symphysis, in the same line, from a quarter to three-eighths of an inch, and introduces the bulbous extremity of the aponeurotome (fig. 2), incising the tissue with

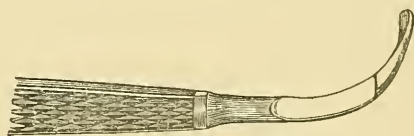


FIG. 2.—The Aponeurotome

it upwards to the extent of about two inches. The operator now takes the sonde à dard from the hands of the assistant, and with his left hand depresses its handle be-

tween the thighs of the patient, directing the point to the wound above the pubes. Here he seeks the end, now readily to be felt through the tissues still remaining uncut, and fixes it between the thumb, index, and middle finger of the right hand, taking care while doing so to remember that it is from the concave surface that the point will be protruded. Having rendered the instrument firm between his two hands, he directs the assistant to press the handle of the stylet so that the point issues from its place for two or three inches, and appears in the wound immediately above the symphysis. The surgeon having given the handle of the sound to his assistant to hold steadily and firmly, takes an ordinary scalpel, and, placing it in a groove existing for that purpose in the stylet, cuts downwards from the point of transfixion nearly to the neck of the bladder behind the symphysis. His forefinger is then applied, with its palmar surface upwards, to the top of the wound, to hook up the bladder, while the assistant withdraws the sonde à dard, having first replaced the stylet in its sheath. The hooked gorget now replaces the finger, and is committed to the charge of an assistant standing on the left side of the patient. The usual search then follows for the stone.

Bladder secured by hooked gorget.

All surgeons have recognised two chief dangers: 1, to the peritoneum; 2, infiltration of urine.

The suprapubic interval.

Returning to a consideration of the history which has been here very closely compressed, one cannot fail to observe on an examination of the numerous details and opinions supplied by the writers, that two special sources of danger have been more or less associated with the high operation in the minds of surgeons from the earliest time to the present. The first is the chance of injuring the peritoneum from its natural proximity to the symphysis pubis; the second is the possible occurrence of urinary infiltration, and its effects in the cellular tissue around the bladder. The first is unquestionably the chief risk, and the most to be dreaded, due as it may be to the narrow limit in some subjects of what may be called 'the suprapubic interval.'

Were this interval a constant quantity, so that we might be certain that the peritoneum would never be encountered below a certain line, the objection to the operation would have been less. But the extensibility of the bladder differs so greatly at different ages and in different circumstances, that supposing original conformation to be uniform in all individuals, which is not the case, great variability in the extent of the interval must be reckoned on. It is the element of uncer-

tainty as to the situation of the peritoneum, which has occasioned a general fear of making incisions in the locality described.

But, on the other hand, it is agreed by all surgeons that the perineal route to the bladder offers several sources of danger, demanding careful study from the pupil, and constant circumspection by the operator. Indeed I think it will be apparent that these are far more serious than those which beset the suprapubic route. On the other hand, they are tolerably constant, and indeed but too persistently present. The one uncertain risk is that of hæmorrhage, due to unusual distribution of a blood-vessel in the deep perineum, which is far from uncommon, and cannot be foreseen ; but when divided the artery must be dealt with promptly and efficiently ; the latter condition, from the deep situation of the vessel, not being always easily practicable. However, in operating by the lateral method, the surgeon must always be prepared for hæmorrhage, since it is liable to occur and to be serious in any adult case from more than one source.

The perineal route to the bladder beset with dangers

Hæmorrhage.

The anatomical sources of danger to elderly adults from the lateral operation—of the cases in children I do not here treat, for there is little risk

to them save that which occurs from the delicacy and laxity of their tissues, always demanding very gentle manipulation—are as follows.

Injury
to the
rectum.

Injury to
the neck
of the
bladder
when cal-
culus is
large.

Mortality
in direct
ratio to
the size
of the
calculus
in the
lateral
operation.

Danger of cutting the rectum, especially in elderly men ; risk of hæmorrhage already adverted to ; and liability to injure the neck of the bladder, not so much by the knife or gorget, as by the bruising and splitting of tissues which inevitably occur from the process of extracting a large stone through that narrow outlet. No stone of two and a half or three ounces in weight (say from seventy to ninety grammes) can be drawn through within the blades of the forceps, however well placed therein, without considerably lacerating the vesical neck. And when stones of double that weight and more are so removed, the injury is very great. Hence it is that the mortality from the lateral operation is in almost a direct ratio with the size of the stone, when dealing with those which weigh upwards of two ounces. When the weight reaches four or five ounces (while some indeed of nine or ten have been so removed) without undergoing fragmentation—itself a very difficult and dangerous proceeding in an empty bladder—the injury inflicted on all the soft parts constituting the lower half of the bladder and the circumjacent parts

must be extreme, so much so that one is surprised that recovery after should ever be possible.

It has already been said that liability to dangerous infiltration of urine about the neck of the bladder has been regarded as one of the objections to the suprapubic operation. I do not believe it will be met with if the proceeding is properly executed. We are too familiar with it in the cases of lateral lithotomy just referred to after the lacerations described, but I see no reason why it should take place after the suprapubic incisions. It has never occurred to any of my own cases, avowedly too few to enable me to speak with authority, yet still a material contribution towards a favourable view of the question, being in all ten in number: two by the old method, and eight by the new. Unless there be unnecessary interference with the cellular connections, low down between the anterior surface of the bladder and the pubic arch, and for which there can be no legitimate occasion, I do not see how such infiltration of urine should be occasioned.

Infiltration of urine very rare in suprapubic operation.

It is evident then that if we can eliminate from the suprapubic operation its one source of uncertainty and danger relating to the peritoneum, we should possess a means incomparably superior

The only real risk is that of injury to the peritoneum;

to the lateral procedure for large stones, if not indeed for any which cannot be easily removed by lithotrity.

none
whatever
from
hæmor-
rhage.

For there is no risk besides those named which can be deemed important. There is no risk at all from hæmorrhage. There are some large veins in the way which are troublesome if cut, but these have only to be dealt with properly, as we shall see hereafter, in order to avoid that contingency. Then there is not a single named artery near to the line of section, and not a single neighbouring organ can be injured.

Septi-
cæmic
poisoning
naturally
rare, and
is pre-
ventible.

Lastly, there is the question of septicæmic infection, deemed important by many, resulting from the exposure of cut surfaces to atmospheric air. My reply to objection on that score is—as I long ago pointed out when comparing my own large experience of lithotrity and of lateral lithotomy, in which latter operation antiseptic treatment is impracticable—that although the wound is exposed to manifold sources of impurity, the occurrence of blood-poisoning is rare, being indeed more frequent in the crushing than in the cutting operation.¹ Furthermore, I have now performed

¹ *Medico-Chirurgical Trans.* vol. lxi. p. 155. Paper on five hundred cases of stone in the bladder operated on by Sir H. Thomp-

ten cases as above stated of the suprapubic operation without any special antiseptic precautions, adopting only the practice of scrupulous cleanliness in the use of instruments and dressings, and a weak solution of carbolic acid, one in 250, in all the water employed, varied sometimes by the use of boro-glyceride, and of boracic acid lint for local applications. I have never used the spray or impermeable coverings to the wound in a single case, believing them to be wholly unnecessary. The wound has been always freely exposed to air whenever the dressings are changed, as they frequently are. Neither do I employ any antiseptic precautions in exploring the bladder, and removing tumours by the perineal route, a proceeding which I have done fifty-six times during the last four or five years, and only one case of pyæmia has occurred, and apparently in the same manner as the few examples after lithotripsy have been occasioned, viz. by inflammation of vesical veins through prolonged cystitis or mechanical injury; and this is now exceedingly rare, if not altogether absent, since I have adopted the modern system of emptying the bladder completely at a

Author's
practice.

son. Twenty-nine deaths after lithotomy contained only one case in which the event was due to septicæmia.

single sitting. But for those who desire to employ antiseptic precautions to their fullest extent, the suprapubic operation affords far greater facilities than the lateral one.

A safe supra-pubic interval, in which to operate, can be ensured.

We have therefore only to deal with the question of danger arising from proximity of the peritoneum to the line of incisions. Can we ensure the presence of an adequate suprapubic interval through which a calculus of the largest size can be safely extracted? I think this important question can be answered in the affirmative.

Modern researches in relation to abdominal and pelvic organs.

At different periods during the last twenty years observations have been made by anatomists upon the relations which the pelvic and abdominal organs hold with each other, by means of freezing the dead subject and making sections while in that condition. The researches of Pirogoff, for example, thus made, are well known; and among numerous other observations, the effect of distending the bladder, and the bearing of this condition on the peritoneum, are delineated in his great Atlas of Plates.¹ It is only at a more recent date that similar researches have comprehended

¹ *Anatomia Topographica*. St. Petersburg, 1859. Fasc. 3 A, tab. 19, 20. Dr. B. Milliot has been referred to in connection with this proposal, on the ground of his having suggested the employment of india-rubber balls for certain purposes by applica-

the influence of distension of the rectum upon the situation of the bladder. Some of the most important among them, perhaps, are those made by Dr. J. G. Garson, now curator at the Museum of the Royal College of Surgeons, London, with much care and labour, at Vienna in 1877. He observed the effect of a distended rectum upon the bladder in several adult bodies; these were afterwards frozen, submitted to section, and the results were carefully measured by him and represented by casts and drawings; the original preparations being themselves now in the museum of the Anatomical Institute at Leipsic. In these sections the bladder had been forced upwards out of the pelvis into the abdominal cavity by considerable disten-

Dr. J. G.
Garson,
1877.

tion in the vagina, bladder, and rectum. His paper on *La Méthode opératoire par ballonnement*, published in 1875,^a shows that he proposed the dilatation of the cavities named by means of thin elastic bags, in order to steady the adjacent parts and admit of suture application after operations of various kinds. He names those for vesico-vaginal, recto-vaginal, and recto-vesical fistulæ; also for vesico-vaginal and recto-vesical lithotomy, for suprapubic lithotomy, and gastrotomy involving the stomach. There is no proposal whatever to act on the situation of the bladder in the way of raising it through inflating the rectum by a bag to a position above the pubes so as to facilitate the performance of the operation there. In short, the subject of Dr. Milliot's paper has no relation whatever with that now under consideration, and is only referred to here because it has by some authors been erroneously associated with it.

^a *Gazette Médicale de Paris*, 1875, August 21, p. 422.

Influence
of a dis-
tended
rectum
on the
position
of the
bladder.

sion of the rectum ; this change of position seem-
ing to be effected chiefly through elongation of the
prostatic and membranous urethra, which occurred
to a remarkable degree. With the uplifted bladder

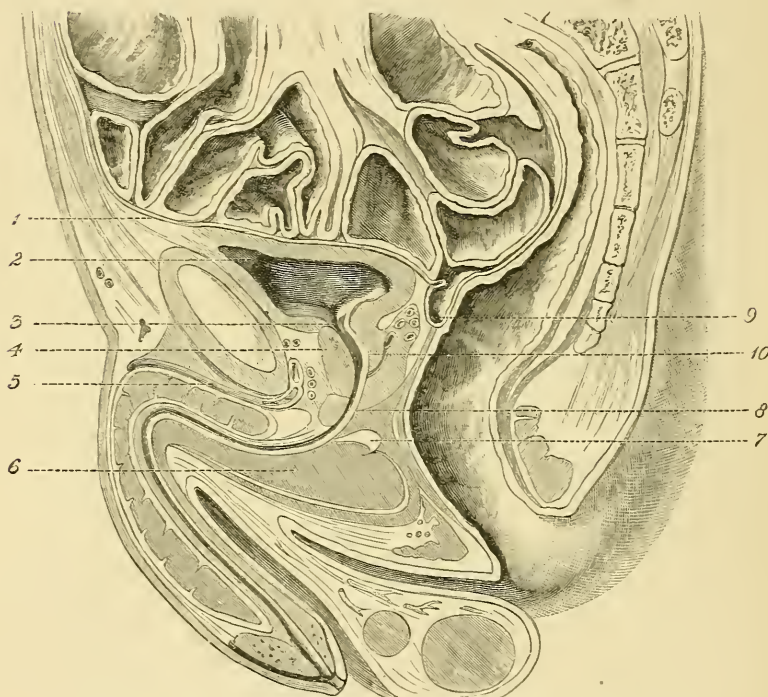


FIG. 3.—Drawing from Garson, showing position of organs in their natural condition; the numerals indicate the same anatomical parts in each drawing.

rose also the peritoneal covering, so as to leave a suprapubic interval of large extent. He drew up a memoir on the subject, embodying the facts obtained and his deductions therefrom, expressly

pointing out their importance in relation to the operation of suprapubic lithotomy. (See figs. 3 and 4, copied by permission from Garson's original

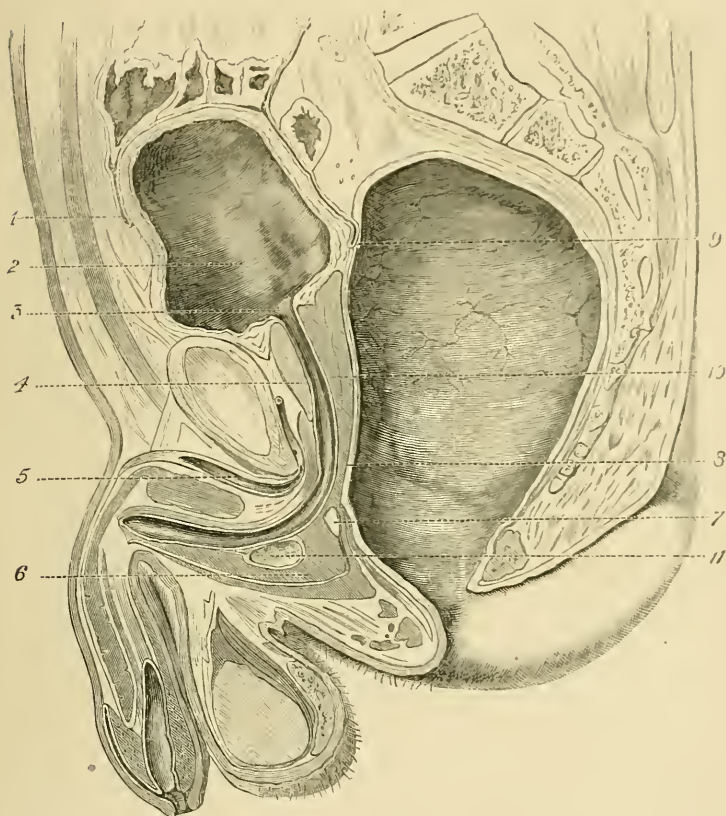


FIG. 4.—Drawing from Garson, showing position of bladder produced by distension of rectum.

work.) This memoir was read for him by Professor Braune at the Congress of German Surgeons on

April 12, 1878 ; it was illustrated by plaster casts of the sections and the drawings referred to, which latter, with the paper itself, were afterwards published in Germany,¹ and also in this country in the following autumn.² Professor Petersen of Kiel was present, and there is little doubt that he was thus led to test by practice the theoretical question of the abundant space in this manner obtained for the high operation, then raised by Garson. For in April 1880, at a subsequent meeting of the same Congress in Berlin,³ Petersen read a paper advocating a resort to the suprapubic route on grounds derived from the facts described ; and he appears to have been the first to establish the practical facility which they offered to the lithotomist called upon to deal with calculus of large size. The method which he had adopted, and now proposed, was to inject the bladder as far as it would fairly bear with some antiseptic solution ; then to introduce a pear-shaped indiarubber bag with a capacity

Professor Petersen of Kiel proposes an important improvement, 1880.

His method ;

¹ *Dislocation der Harnblase und des Peritoneum bei Ausdehnung des Rectum.* Von Dr. Med. J. G. Garson, aus Edinburgh. Read at the Congress of German Surgeons at Berlin, April, 1878 ; and published in the *Archiv für Anatomie*, 1878, p. 171, with plates.

² In England this paper was first published in the *Edinburgh Medical Journal*, October, 1878 ; and as a pamphlet shortly afterwards.

³ Memoir read by Professor Petersen at the Congress of Surgical Science at Berlin, April 7, 1880 ; appearing in the *Archiv für Clin. Chirurg.* vol. xxv. 1880.

of about sixteen ounces into the rectum. This being distended, he also found that the patient's bladder gradually rises into the abdomen and carries with it the fold of peritoneum, thus leaving above the pubes the interval described, in which the necessary incisions can be safely made. The steps of the proceeding were then not materially different from those employed by previous operators. Finally, the stone being removed, Petersen employed sutures to bring together the sides of the wound, leaving only space for a tube to convey the urine from the bladder. In one case he attempted to close the bladder entirely with sutures, but without success.

his attempt with sutures.

The proceeding was adopted subsequently in Germany, with and without modifications, chiefly in the cases of children, and with success. Périer was the first to try it in Paris in 1881;¹ he was soon followed, among others, by Guyon, whose interesting paper, with an account of eight cases, appeared in 1883.² I advocated the proceeding on the basis of these various reports in my lectures, as above stated, and very soon after doing so performed my first case, being the first example of

Results of his proceeding in other hands, 1881-3.

¹ *Mémoire à l'Académie de la Méd.*, August 1881, by M. Périer; with report thereon by M. Gosselin, in September.

² *Contributions Cliniques*, par J. T. C. Guyon. *Annales des Maladies des Organes Urinaires*. Paris, 1883.

Author's
first case,
1883 ;

calculus I had met with, during more than a year, sufficiently large according to my judgment to warrant me in substituting a cutting operation for the crushing one. On July 2 in that year I removed from a man aged thirty-six a calculus of pure cystine, weighing $2\frac{3}{4}$ ounces, or about 65 grammes, and he made an excellent, although slow, recovery.¹ Since that time I have performed seven other cases, making eight, by the new method of rectal distension, with one death only. Each one of the other seven patients is living and well at the present date.

followed
by seven
others.

The second case was in March 1885 : that of a lad aged twelve years, with a calculus weighing $1\frac{1}{2}$ ounce, or about 44 grammes.²

The third was in April 1885 : that of a gentleman aged seventy-three, from whom I took a calculus weighing also $1\frac{1}{2}$ ounce, or 44 grammes.³

The fourth, in the same month, was an enormous calculus of pure uric acid, weighing 14 ounces, or more than 400 grammes, from a man aged sixty-two.⁴

All these recovered. Then followed the fifth case, that of a very infirm and suffering patient of seventy years, whose calculus weighed $1\frac{3}{4}$ ounce,

¹ *Lancet* (report in), October 18, 1884.

² *Ibid.*, July 18 and 25, 1885. See also the reports of cases at the end of this volume.

³ *Ibid.*

⁴ *Ibid.*

or about 50 grammes, and who died of exhaustion, without manifesting any signs of local injury or of morbid action, on the ninth day.

The sixth case occurred in August last, in a gentleman of seventy-six years—the calculus weighing $6\frac{1}{2}$ ounces, or 195 grammes—who made a good recovery.

The seventh case was that of a lady aged seventy-three, in whom I performed it in October last, in order to remove a large papillomatous tumour, and did so successfully.

The eighth case was that of a gentleman aged fifty-five, for the removal of a very large papillomatous tumour, on November 16—who is recovering rapidly.

I shall now consider the practical mode of performing the operation ; detailing the steps which appear to me to be necessary in order to accomplish it safely and easily.

Description of the operation in detail.

First, let it be stated that it is a very simple proceeding, and easy of performance, much more so than is lateral lithotomy. A good deal has been written, as it appears to me, with a tendency to associate unnecessary complications with the new method, to induce the surgeon to take certain needless precautions in the way of preparatory

A very simple one.

treatment in regard to the practical operative procedure, and to the after management.

Unneces-
sary re-
finements
and addi-
tions have
been em-
ployed.

Very few indeed of these proposals appear to be desirable, while some of them are, in my belief, absolutely injurious in practice.

No previous preparation of the bladder is necessary. Attempts to increase the capacity of the viscus by preliminary injection, which some surgeons have made, almost invariably fail to accomplish the object aimed at; on the contrary, they increase already existing irritation. Furthermore, a capacious bladder is by no means necessary.

Introduc-
tion of
rectal bag.

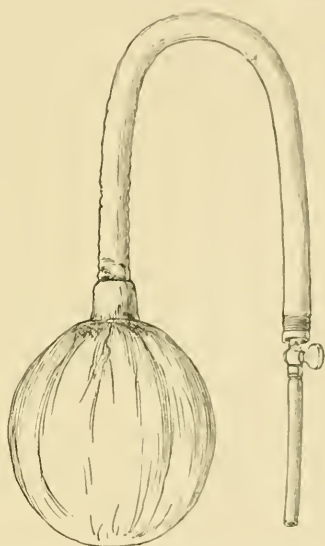
An empty condition of the rectum having been ensured by enema, the patient may lie on his back on a table, with his head and shoulders slightly raised. As soon as he is unconscious, I roll the empty indiarubber bag into a cone, grease it well, and introduce it with a firm hand into the rectum, taking care that it shall be completely above the grasp of the sphincter (see fig. 5). Then about twelve or fourteen ounces of water are gently thrown into the rectal bag, in the case of an adult.

Injection
of the
bladder to
be very
carefully
made,

I prefer to make this the first step of the proceeding. I next introduce a flexible catheter into the bladder, and inject slowly and gently six, eight, or ten ounces, feeling my way carefully

according to the resistance perceived in the act, and the degree of eminence observed above the pubes, almost invariably obvious to the eye as well as to the hand, taking care to avoid the application of force. The rectal distension is essential, the vesical need not be considerable.

The fluid used should be a mild antiseptic solution, such as one of boracic acid, which is often adopted. Employing carbolic acid solutions uniformly for most purposes, I generally inject one not exceeding in strength one part in 1,000. The catheter being withdrawn, the base of the penis is firmly ligatured with an



with weak
antiseptic
solution.

FIG. 5.—India-rubber bag for the rectum.

indiarubber tube. Palpation above the symphysis now demonstrates the position of the bladder, most of it lying above the brim of the pelvis in the form of a rounded ball. Having taken my place by preference on the patient's left side, a vertical incision of the skin and cellular tissue, strictly in the median

First incision.

line, over the salient bladder, is made about three inches long or a little more, overlapping the hard upper border of the symphysis below. The skin may be conveniently divided by transfixing a fold lifted up for the purpose; the precise method, however, is not material. This being done, I lay aside the knife, and prefer to use only the right index finger-nail for separating the tissues, which differ in nature and in thickness among individuals according to the amount of fat present—a matter very easily accomplished, until the linea

Separation of all soft tissues by means of the finger-nail.



FIG. 6.—Flat director.

Division of the linea alba;

alba is reached. A few fibres of this should be seized and slightly raised by means of an artery forceps, while with the blade of a scalpel held horizontally a small opening is made, so as to admit a wide flat director (fig. 6) to be carried beneath, on which to divide that structure upwards and downwards for about an inch and a quarter in each direction. The finger-nail is then again employed, separating the muscles, &c. in the median line until another fibrous layer is apparent, the transversalis fascia, and it is divided

of transversalis fascia.

on the director precisely as before. If the stone is large, the insertion of a rectus muscle into the pubic ramus on each side may be divided to a small extent. The yellow fat covering the bladder now comes into view. This should be carefully separated in the middle line by scraping with the nail from behind the symphysis pubis in the direction upwards, so as to place the peritoneum out of reach should it be near, until the prominence of the distended bladder is easily felt, and perhaps even the stone, covered only by the

Partial division of muscular insertion.

The yellow fat.

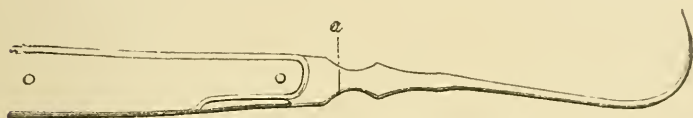


FIG. 7.—Hook used when opening the bladder.

vesical wall beneath the operator's finger. Veins appearing hereabout may give much trouble by bleeding if the knife is employed; but for this, however, there is no occasion. By scraping with the nail upwards and downwards, and pushing or drawing them carefully aside, they may be safely removed from the line of action until the fibres of the bladder are exposed. After due examination a small curved hook (fig. 7) should be carried through the vesical coats, when a little fluid is seen to issue by its side, proving that the bladder

Veins to be watched.

Opening the bladder.

has been fairly entered. Maintaining the hook elevated by the left hand, a scalpel in the right makes a small puncture by the side of the hook (which still retains its hold), just sufficient for the index finger to be introduced and partially stop the outflow of water now rapidly issuing from the orifice. A few moments suffice for the finger to determine the size, form, and position of the stone, and to decide how large an opening is necessary for its removal. I make the opening by introducing the left index by the side of the right, separating the two fingers gently so far as may appear sufficient to accomplish the purpose, thus avoiding the use of the knife, and with it, sometimes, troublesome hæmorrhage.

Enlarging
the open-
ing.

Silk loops
in margin
of bladder
when
tumour
to be re-
moved.

When the operation has been performed for the purpose of removing a tumour, I have passed a loop of stout silk through each margin of the vesical opening in the same manner as we have been accustomed to do in the borders of the cut urethra, when opening it from the perineum in front of an impassable stricture. Each loop gently held up by an assistant on either side gives easy access to the bladder, which may be further aided by letting some of the liquid issue from the rectal bag. In dealing with the large hard calculi for

which the operation has been chiefly adopted, the use of the silk is unnecessary.

The extraction of the stone may be done in the usual manner by means of forceps ; but I prefer to effect it if possible by using the two index fingers as blades, while the two hands are locked together by interclasping the other fingers of each. In this manner one index is insinuated beneath the stone, the other follows above it, and then by grasping the two hands together, the stone is safely removed. Each finger is applied like the single blade of a midwifery forceps. The bladder is now ascertained to be free from other contents, and little else remains to be done. The open wound will give issue to the urine, and I have seen no danger of infiltration if the wound is left quite free for the purpose of ensuring a patent outlet. The only attempt I have made to limit the extent of the wound has been by introducing one large suture about an inch below the upper angle, through the abdominal walls. I have never used a single stitch in the bladder ; and whether even the former is serviceable or not may be questioned. I have thought it desirable to leave five or six inches of large indiarubber tube for the first twenty-four or forty-eight hours to ensure

Extraction of calculus.

Leave the opening patent.

A tube for a day or so perhaps ;

sometimes
a catheter.

Position
of the
patient.

Subse-
quent
dressings.

No vessels
require
ligature
when dis-
section is
made by
the finger-
nail or in-
strument
recently
devised by
author.

a free opening in case of hæmorrhage, and some-
times also a soft full-sized catheter in the urethra.
The patient has generally been relieved by the
removal of these in two or three days, sometimes
sooner. He lies on his back during the first
twenty-four hours, and then on each side alter-
nately for six hours at a time, and all the urine
runs easily in this way from the wound, and
excoriation of the skin is prevented by one side
only being wetted for that short period at a time.
No other dressing than layers of lint soaked in
weak carbolic acid solution, or in one of boracic
acid, has ever been employed by me. Every
patient has made a good recovery except one, the
man of seventy-three years, who died, as before
said, of sheer exhaustion on the ninth day.
Among the eight cases one artery only was tied,
and no torsion or other method was required, and
there has been no venous hæmorrhage. This
result I attribute to the substitution of the finger
nail for the knife in the division of all tissues
except the three layers named : the skin, the linea
alba, and the transversalis fascia. The nail not
only serves to guard the veins as above said, but
to push up the peritoneum, should it be in the
way, at the upper angle of the wound ; but this I

believe it rarely can be if the rectal distension has been properly made. In order to save the use of the finger-nail, and for those who are unable to rely on that appendage, I have lately designed and employed an ivory separator, which is, perhaps, more trustworthy than the former. It is made entirely of bone or ivory, and consists of a central handle with a projecting portion at each end : one to represent or to replace the nail, a thin lamina slightly serrated ; the other a curved hook to draw veins out of the way (fig. 8).

Ivory separator described.

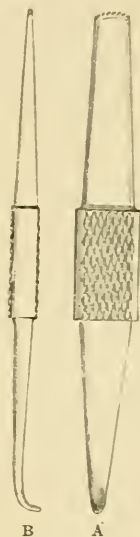


FIG. 8.—The ivory separator.

A, front view ; B, in profile, showing the hook.

Modification of operation necessary for female patients ; and for males with urethra opened from the perineum.

There is a modification of the suprapubic operation necessary to be adopted when dealing with the female bladder, since it cannot be permanently distended like that of the male. And the same condition occurs in that of the male also, if, after opening the urethra for the purpose of exploring the bladder, it is deemed necessary immediately to operate above the pubes. This may happen, as it has done on one occasion to myself, when I have found the tumour too large to be removed by the perineal route, or is so situated that it can be

only safely attacked from above. The distension of the rectum is to be fully made as usual ; but as no fluid can be securely retained in the bladder in the circumstances described, the incision in the bladder must be made on a director previously passed into the viscus. This director should be in the form of a well curved hollow steel sound, with an open end neatly closed by an olivary bulb attached to a strong stylet running through the instrument, and capable of being fixed at the handle. Fig. 9 shows the sound, and fig. 10 the stylet with the bulbous end. At the extremity of the sound, a wide open slit about three-quarters of an inch long is made in the concave aspect (see fig. 11), with the bulb in place ; fig. 12 shows the end of the instrument when the bulb is withdrawn.

A sound is desirable.

Described.

Mode of using it.

The sound being passed, and the olivary end felt above the pubes, after the dissection has approached the bladder, the stylet is removed. The end of the sound and the slit therein are now easily recognised by the index finger ; and then the hook is passed deeply into the slit so as to take up a portion of the wall of the bladder and hold it securely, while it is perforated by a scalpel in an adjacent spot. By this means the bladder is prevented from collapsing and slipping down

out of sight or reach—an accident very apt to occur and to embarrass the operator if he opens



FIG. 9.—Hollow sound for the high operation.

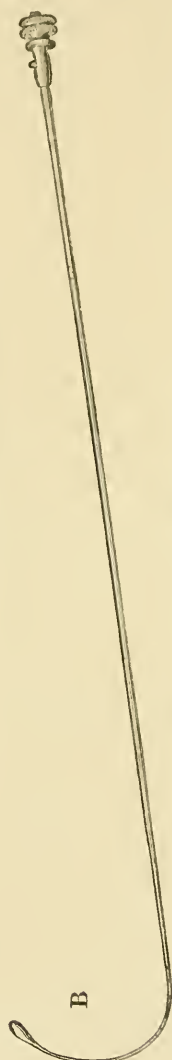


FIG. 10.—Its stylet with a bulbous end.



FIG. 11.—End of the sound containing bulbous stylet. Natural size.



FIG. 12.—The same, with the bulb withdrawn.

the viscus on the end of an ordinary sound, which usually emerges by the opening while the bladder disappears by contracting and shrinking around the instrument.

In these circumstances it has been often found difficult to introduce anything into the cavity by the side of the sound, a dilemma which the little contrivance proposed above plainly provides against. And it is in precisely these circumstances, when the operator finds it difficult to regain his way into the bladder, lost by the sliding down of the empty viscus over the sound, and also when the opening made is small, and has not been secured with the loops of silk recommended above, that his finger is apt to fail in the attempt to enter the cavity. Nothing is easier than to be deceived in this matter, and he may break up cellular connections outside the neck and the base of the bladder, erroneously believing all the time that the finger is exploring the interior. Then it is that infiltration of urine is likely to occur; and as the accident described has, I believe, in former days not been an uncommon one when the sound has been relied on for a guide, the former liability to that unhappy occurrence may thus, perhaps, be explained. There is no fear of the contingency

happening now in the modern mode of performing the operation.

It is worthy of remark here, that Dr. Bouley, before referred to, has made numerous experiments by distending the rectum on the dead body, with the view of determining certain questions relating to the extent, &c., of the suprapubic interval, and among other observations he has made the following. He finds that, under the influence of rectal distension, the suprapubic interval is rather larger in persons inclining to be stout than in those who are thin;¹ and that in very spare subjects the interval was still less affected by distension. Further, he believed that a sufficient interval is ensured by a moderate amount of distension, say about 13 or 14 ounces in the rectum, and about 8 or 10 ounces in the bladder, an opinion which my experience on the living corroborates. Without doubt it is the rectal distension which is the potent factor in forcing the bladder into the abdomen, and with it the peritoneal layer; more so at least than the distension of the bladder itself—a fact which Garson has specially demonstrated.

Practical
result of
some of
Bouley's
researches
on the
subject.

In relation to the removal of vesical tumour, although a simple incision from the perineal sur-

¹ Bouley, *op. cit.* p. 95.

face to the membranous urethra, sufficing only to admit the index finger to enter and explore the bladder, enables an expert operator also to remove a polypoid growth, I am free to admit that large and compound tumours are more safely and efficiently dealt with by the modern suprapubic operation.

I have already expressed that opinion in my work on vesical tumours¹ in relation to exceptionally large growths, although I had not at the date of its publication thought it necessary to adopt the high operation for any of the cases which had come under my observation.

But a larger experience of the removal of calculus by the new procedure has increased my estimate of its probable value for the removal of tumours also. Naturally the high operation permits a somewhat more extended use of the sense of touch than is practicable by the perineal incision; and it adds thereto the ability to see to a limited extent, conferring also an opportunity to apply the cautery or styptics, in some cases perhaps a course not without value.

There is another ground also on which the suprapubic operation may be sometimes preferred

¹ *Tumours of the Bladder*, by the Author, p. 77. London, 1884.

to the other, and that is the remarkable freedom from hæmorrhage which characterises it. The wound in the abdominal region is much larger, much more formidable in appearance, than that in the perineum, but the latter may—although in quite exceptional cases—bleed largely; while, as has been shown in the foregoing pages, this accident can scarcely ever happen in connection with the first-named procedure, if performed in the manner there advised. I selected it in case No. 8 because the patient was the subject of a large growth, and also because he was so anæmic that I feared the risk of fresh hæmorrhage.

So safe and so simple indeed is the suprapubic operation here described, that I will reiterate in this place before concluding, and with increased emphasis, an opinion incidentally mentioned at the outset. I believe that a surgeon who is not practically familiar with lithotripsy, on meeting with a hard calculus which is found on trial not to be readily seized with a lithotrite, will be more likely to achieve a lasting success for his patient by adopting the cutting in preference to the crushing operation.

Cases of the High Operation by the Modern Method, illustrating the foregoing remarks, and referred to in the text.

CASE 1.—A gentleman, aged 36, formerly under the care of my friend Dr. William Roberts, of Manchester, who had observed continuous and large deposits of cystine in the urine for some time, came to me with severe symptoms of calculus in the bladder on June 18, 1884. On sounding, I immediately struck a large stone, and advised lithotripsy without delay.

1884, *June 19.*—I attempted under ether to seize a large, hard, and rather rounded mass, but it escaped the grasp of my largest lithotrite. Dr. Caspar, of Berlin, and Dr. Pinter, of Buda-Pesth, were present. After devoting three or four minutes to the careful examination of the calculus, both by the bladder and rectum, I determined to wait a day or two, and then to perform the suprapubic operation. The patient had fever after this, which was unusually prolonged, and nearly a fortnight elapsed before I considered him in a fit state for operation.

July 2.—Mr. Moss gave ether; the gentlemen above named were present, and my friend Mr. Buckston Browne was my chief assistant. I commenced by injecting about nine or ten ounces of a weak solution of boracic acid in water into the bladder, and tying the penis firmly with a vulcanised catheter, I then introduced the pear-shaped indiarubber bag, folded longitudinally, into the rectum, distending it gradually with water from a large syringe until about twelve ounces had entered, when the stopcock was turned.

On percussing the lower part of the abdomen, it was obvious that the bladder was now occupying the suprapubic region, a rounded mass corresponding thereto being very clearly defined. I made the usual longitudinal incision about three or three inches and a half long in the median line, the lowest point of it reaching to the front aspect of the upper margin of the symphysis; on laying bare the linea alba, it was divided on a director; the transversalis fascia was treated in like manner, and also the fibrous attachments of the recti muscles to the symphysis for nearly half an inch laterally on each side of the opening. The yellow fat covering the bladder then came into view, and this I divided with the index-finger and forceps. Scraping in a direction upwards with the nail of the right index finger, and hooking up all the tissues therewith into the upper angle of the wound, it was easy to identify the distended bladder, the surface of which had thus been cleared. No artery was cut, but a vein or two in the fat had been drawn aside by the finger, so that almost no blood was seen. Inserting a well-curved hook into the bladder, and thus giving issue to a little of the injected solution, I incised the vesical coats sufficiently to admit my finger, when I felt lying there directly beneath it a large calculus, the position of which was, topographically considered, abdominal, and not pelvic. It was now a simple matter to enlarge the incision and remove the stone with a pair of small forceps and my finger, taking care to maintain the sides of the bladder in place by hook and spatula. The ligature was removed from the penis, and the water allowed to flow from the rectal bag; a No. 12 gum catheter was tied

in the urethra, and a large vulcanised tube five inches long (with a single lateral aperture only, close to the terminal one) deep in the bladder, so as to ensure free drainage. Finally the rectal bag was removed, completing the proceeding.

I laid the patient on his side, well supporting him in that position by numerous pillows at his back and between the legs. This position appears to be a desirable one in the after-treatment, since it facilitates the drainage and enables the attendants to keep the patient dry. He was changed once daily from the right to the left side, and *vice versâ*. The tube was removed from the bladder on the fifth day, the catheter on the sixth. The first urine passed naturally by the penis was on July 17, the fifteenth day after the operation.

July 19.—He had severe secondary hæmorrhage from an arterial source rather deep in the wound, which happily was stopped by a ligature within a few minutes of the occurrence. He gradually regained strength until July 29, when, without known cause, an attack of epididymitis in the left side set in, and again reduced him.

August 8.—He begins to sit up; passes much urine by natural passage; the wound is fast contracting.—*16th.* Has walked out of doors for the first time.—*20th.* Wound closed, holds urine three hours; appetite good; recovering strength fast; returned home on the *24th*, and bore the journey to the North well.

The calculus proved to be cystic oxide throughout, was of a rounded oval form, and weighed two ounces and three-quarters.

I heard in September from Dr. Roberts that he had seen the patient, that his condition was quite satisfactory, and that no cystine was at present observable in his urine. In the summer of 1885 he called on me, an active, busily-engaged man, enjoying excellent health.

CASE 2.—W. R. P——, a lad aged 12, seen in consultation with Dr. Powdrell, of Euston Road, on March 17, 1885. The symptoms had not been very severe, but had become more so during the last six months. Attention had been drawn to them through the fact that the lad was forbidden by his master at school to leave the class-room to pass urine, an occurrence which led to my opinion being sought. I had little doubt as to the cause, and on sounding him found a large calculus, which, the patient's age being considered, I decided to remove by the high operation.

March 24.—Mr. Moss gave ether; Mr. Buckston Browne assisted me, with Mr. Powdrell and Mr. Robert Priestley. The rectum bag was introduced, and the bladder injected in the usual manner. The incisions and mode of proceeding were the same as before described; one vessel only requiring to be tied. A wide flattish oval calculus weighing an ounce and a half was removed with some little trouble, owing to its form and size. The recovery took place steadily without interruption.

March 26.—A little urine has passed by the urethra.

March 31.—Healing of the wound has progressed rapidly.

April 12.—He sits up daily.

April 15.—All urine passes by the urethra, and he returns home to-day.

In the beginning of June the patient was brought to see me; his local and general condition being in every way satisfactory.

CASE 3.—W. H——, aged 62, a man of large and apparently powerful frame, from whose indistinct recollection it may be inferred that symptoms of calculus in the bladder had been experienced from fifteen to twenty years. For the past eleven years he has been unable to work (he is a small farmer), and during the last seven years he has passed his time chiefly in bed and on the sofa, almost entirely within doors, unable, as he said, to make up his mind to undergo an operation.

On April 28th last I saw him for the first time, being sent to me by Mr. Atkinson, of Bennington, Boston, Lincolnshire, for consultation. I sounded him, finding a stone of extremely large size; I advised him at once to submit to lithotomy, and determined on the high operation, as above stated.

On the following day, April 29th, Mr. Moss gave ether, Mr. Buckston Browne chiefly assisting me, with the aid of Dr. Hickman of Dorset Square, and Professor Rockwood of Colombo, Ceylon. The india-rubber bag was first introduced into the rectum, and then distended with twelve or thirteen ounces of water. A catheter was introduced into the bladder and nearly the same quantity injected there. The penis was firmly tied with a vulcanised catheter as before. The position of the bladder above the pubes was now very distinctly

visible, and could also be defined by palpation and percussion; it resembled a small gravid uterus. I made an incision of the skin and fatty tissue from the symphysis pubis upwards by transfixion, about four inches long, dissecting in the manner directed down to the linea alba; no vessel requiring attention was met with. Arrived at the linea alba, I notched it, and incised it upwards and downwards on a director, the total extent being about three inches. I then divided its connection with the symphysis pubis on each side laterally for about a third of an inch, as well as the attachments of the recti, and separated the latter with my finger, then divided the transversalis fascia, and continued by means of the finger-nail to avoid the veins, and to arrive at the bladder without any hæmorrhage worth noticing, and having had no occasion to tie or twist a single vessel. The sense of fluctuation from the bladder beneath the finger was now so distinct that I had merely to insert a small curved hook; holding this in the left hand, I resumed the scalpel, but solely for the purpose of puncturing the bladder sufficiently to allow the index finger to enter, which stopped the outflow of water as it passed and came into contact at once with a large stone underneath. I now insinuated the other index finger and gradually enlarged the opening, solely by finger distension, until I made room for the use of a large lithotomy forceps. By means of this, after two or three attempts, I acquired a firm hold on the longitudinal axis of an enormous stone, and removed it without much trouble (see fig. 13). There was no hæmorrhage worth mentioning, and no treatment was required in regard to it.

The indiarubber rectal bag and the ligature from the penis being removed, he was placed in bed on his back. No tube or catheter was introduced, and the urine drained off freely from the wound. There was very little fever, and after two days the patient was placed alternately for six hours at a time on either side, so as to provide for the outflow of urine with as little excoriation of the skin as possible.

May 20.—He is slowly acquiring strength; the pulse about ninety; the temperature at times a degree and a half above the normal standard. He is prone to slight diarrhœa, but is gradually improving.

June 4.—Walks about his room. Passes four ounces of urine daily by the urethra.

June 14.—He is desirous to leave town and enjoy country air. One third of the urine passes by the urethra, the rest by the suprapubic opening. His health is excellent; he walks daily, and as the healing process of the wound, greatly as it has diminished in size, will progress better at home than in London, no objection is made to his return.

July 14.—He writes me that ‘almost all the water passes by the proper channel;’ the wound, nearly healed, ‘would only just admit a cedar pencil;’ that he is ‘in capital health, and walks two miles daily.’

In September I heard from him, and from his medical attendant, Mr. Atkinson, that he had made a complete and sound recovery, and had acquired active habits and a state of health he had not enjoyed for years.

CASE 4.—A gentleman, aged seventy-three, previously under the care of Dr. W. M. Campbell, of

Liverpool, and seen by me on April 28, 1885. The symptoms were severe, and had existed more or less during about five years.

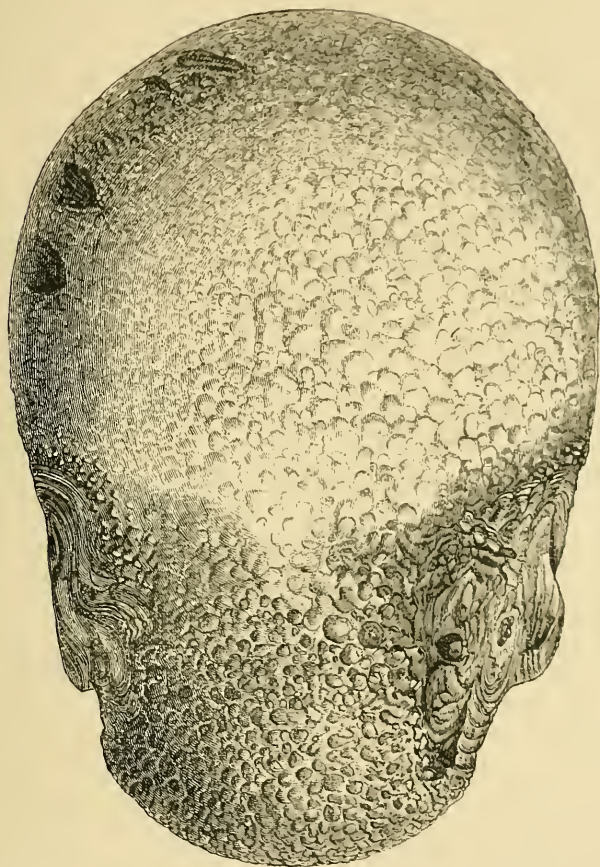


FIG. 13.—Uric acid calculus, represented of the natural size.

It measures $4\frac{1}{2}$ in. in length, by fully 3 in. in breadth; the major circumference being almost 12 in., the minor 8 in. The weight is 14 oz. avoirdupois, or about 400 grammes. There is a remarkable denudation of the layers of the calculus on each side, corresponding with the orifices of the ureters in the bladder; the entering currents from which have worn away the stone to a considerable extent.

May 2.—Mr. Moss gave ether, Mr. Buckston Browne assisting me; Dr. Hickman, of Dorset Square, and Dr. Rockwood, of Colombo, were present. I intended to perform lithotrity, but found the stone large, constantly slipping from the lithotrite, and the bladder by no means a very favourable one for the purpose. I decided to perform at once the high operation, and did it in the manner above described. No vessel was met with requiring either ligature or torsion; and, as in the preceding case, the dissection beyond the linea alba was made entirely with the finger-nail, a large vein or two being drawn aside. Nevertheless, in the afternoon of the day rather free hæmorrhage took place, and was arrested by firmly plugging the wound, secured by a pad and firm bandage. The stone was somewhat more rounded than flat in its contour, and weighed rather more than an ounce and a half.

The patient was greatly troubled with hiccough for several days; he was very feeble, and his progress consequently was very slow. All the urine passed by the wound. It was a month before he was able to leave the bed and sit up. But on June 12 he was able to go out in a Bath chair, and had acquired a fair degree of strength, his age considered. The urine still came chiefly by the wound, which, however, had much diminished in size; an indiarubber pad was arranged to cover it, enabling him to retain the contents of his bladder about two hours or so. On the 23rd inst. he left town for the seaside, in an improved condition.

July 15.—The patient called on me. He now passes all the urine naturally, and the wound has all but cicatrised. His health and strength are remarkably good.

CASE 5.—J. B. aged 70. He had suffered severely the last two or three years, and was, when I first saw him, July 29, 1885, with my friend Mr. John Adams of Aldersgate Street, in a condition of extreme distress. He had only just been called to see the patient, and, suspecting the cause, desired me to see him in consultation. I sounded him and found a stone of full size, and decided to operate as soon as matters could be arranged for the patient's comfort.

August 5.—On attempting to crush the stone, I found it hard and large, while the bladder and prostate were greatly diseased. I determined, therefore, to perform the suprapubic operation at once. It was done in the manner above described; no ligature was necessary. Besides Mr. Adams, Dr. Stein of New York—author of the well-known monograph on ‘*Tumours of the Bladder*’—was present at the operation. Everything went on well locally, and no signs of infiltration or septicæmic affection appeared. The patient was at the first very weak, and never regained strength; was averse to food; showed slowly increasing exhaustion, losing power day by day, and died on the 13th inst.

CASE 6.—J. B., a gentleman aged 76. Seen at Woodbridge, Suffolk, on August 12, 1885, with Mr. R. Jones and Mr. A. A. Henley there. I had first seen this patient on December 7, 1870, and on that occasion only, previously. He had consulted me in London then; I had sounded him, found a small calculus, advised his submitting to lithotrity without delay—advice, however, which he declined—and I saw him no more until last August, when being summoned to the country to visit a patient suffering severely, I discovered

my old patient of 1870. He was now the subject of a large stone, for which I advised the suprapubic operation, and I went down on the 19th inst. to perform it, accompanied by Mr. Moss to give ether, and Mr. Buckston Browne, meeting Mr. Jones and Mr. Henley. The operation was done in the manner already described. No vessel was tied, and the knife was used only for the skin and the two fascial layers, and for the

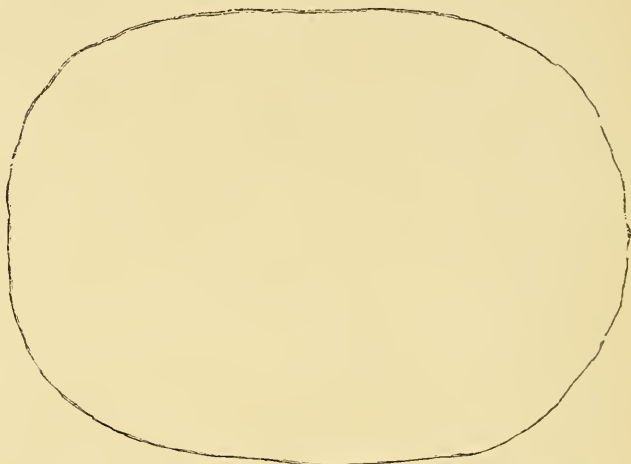


FIG. 14.—Large uric acid calculus with phosphatic coating.

puncture of the bladder. I removed a large oval uric acid calculus with my two index fingers in the manner described in the text. It weighed $6\frac{1}{2}$ ounces or 195 grammes, and measures $3\frac{1}{4}$ inches in length by $2\frac{3}{8}$ wide, and $1\frac{5}{8}$ in thickness: 9 inches by the largest circumference. (The fig. 14 gives the exact size and form.) It is interesting thus to be able to know the time requisite in this case to produce such a calculus. Sixteen years had elapsed since I struck a small stone,

which I then described as not larger than a nut. He made a good recovery; and is now well, without pain or other troublesome symptoms, and still active and healthy for his age. I saw Mr. Jones, his medical attendant, November 23, who gave me the foregoing report of his present condition.

CASE 7.—Miss P., aged 73, sent to me in August 1885 by Dr. Edis of Gloucester. She has suffered from vesical hæmorrhage during the last year and half, and of late her symptoms have been severe and distressing. She is disturbed ten times in the night to relieve the bladder, and rarely has an interval of freedom during the day so long as three-quarters of an hour. She also suffers severely from pain during and after the act. On sounding, no stone is to be found, nor can anything like a firm growth be detected. On examining the urine no tumour débris is recognised. I decided to dilate the urethra and explore the bladder, suspecting the cause of her symptoms to be papilloma in some form. She desired to postpone this until the autumn.

October 17, 1885. — Mr. Moss gave ether; Mr. Buckston Browne assisting me as usual. On exploring the bladder, my finger encountered a large fleecy fimbriated papillomatous growth, springing from a single peduncle, not very narrow but not wide, at the upper extremity of the bladder. Accordingly I decided at once to do the suprapubic operation. This was performed with the indiarubber bag in the rectum as usual; but there was of course no distension of the bladder. In this I placed a sound, and then proceeded in the usual way, doing all the dissection with the

finger-nail, and finding no vessel to tie or twist; there was no bleeding worth naming. Having opened the bladder, I inserted in each margin of the opening a loop of stout silk to keep the cavity patent and to facilitate after proceedings. The tumour was found easily, and removed in several fragments, the whole being the size of a moderate orange. It is now in the hands of Mr. Shattock, the curator of St. Thomas's Hospital, for the purpose of preservation in the museum there. Very little constitutional disturbance ensued, and she made steady progress the next three weeks.

November 14.—Wound seems to be nearly closed. The urine passes in about equal quantities by it and by the natural passage.

November 21.—There is a great deal of irritation caused by the deposit of phosphates, probably on the base of the tumour remaining in the bladder. These are washed out, by which means relief is afforded.

December 7.—Wound nearly healed; much improved every way, and is beginning to take exercise.

CASE 8.—A. S., aged 55. Has been the subject of frequent micturition for four or five years. I first saw him November 11, 1885.

In the commencement of 1884, the patient first observed blood in his urine in small quantities. The quantity, gradually increasing, has become very considerable the last few months. The patient looks exsanguine and is very feeble. Micturition extremely frequent day and night, taking place every half-hour or so. Pain severe at end of penis. Blood is most in quantity at the end of the act.

Sounded; nothing distinctly felt; rectum ex-

amined; prostate normal; the bladder is felt to be rather rounded and full beyond.

November 16, 1885.—Mr. Moss gave ether. Dr. Lloyd of Bloomsbury, Dr. Green of Iowa, U.S., and others present. Mr. Buckston Browne assisted me.

Expecting a large tumour, I did the suprapubic operation precisely as in the preceding case. A quantity of soft growth together with firmer masses was removed with the fingers and forceps, leaving a firm hard base close to the walls of the bladder. No vessel was tied; a tube was put in the wound, but no catheter.

November 17.—Removed tube. He lies on his side right and left alternately, and the urine runs out freely.

November 23.—Patient has had little suffering, requires no morphia. There is little or no rise of temperature, has no bad symptoms, takes light nourishment freely.

November 26.—Progressing satisfactorily.

December 7.—Recovering rapidly; urine commencing to pass by urethra.

The tumour, which is the largest I have removed, is at the museum of University College.

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*London, 11, New Burlington Street
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